

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES****OFFICE ENGINEER**1727 30th Street MS-43

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Be energy efficient!*

November 14, 2011

06-Ker-99-R28.4/R44.3

06-0L6404

Project ID 0600020132

ACNH-P099(551)E

Addendum No. 3

Dear Contractor:

This addendum is being issued to the contract for CONSTRUCTION ON STATE HIGHWAY IN KERN COUNTY IN BAKERSFIELD FROM BEARDSLEY CANAL BRIDGE TO ROUTE 46/99 SEPARATION.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on Wednesday, December 7, 2011.

This addendum is being issued to revise the Project Plans, the Notice to Bidders and Special Provisions, the Bid book, and the Federal Minimum Wages with Modification Number 31 dated 11/04/2011.

Project Plan Sheets 3, 10, 15, and 22 are revised. Copies of the revised sheets are attached for substitution for the like-numbered sheets.

In the Notice to Bidders and Special Provisions, in the "NOTICE TO BIDDERS," the thirteenth paragraph is revised as follows:

"Do not bid more than 600 working days."

In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES," is revised as attached.

In the Special Provisions, Section 5-1.11, "PAYMENTS," Item J is added to the list after the first paragraph:

"J. Bar Reinforcing Steels."

In the Special Provisions, Section 10-1.01, "ORDER OF WORK," the following paragraph is added after the first paragraph.

"Attention is directed to "Incentives and Disincentives" and "Maintaining Traffic" of these special provisions. You must complete all the work on Stage 5 Phase 1 including remove temporary railing and place new permanent pavement delineations within 50 Calendar Days. By the end of this 50 day period, all lanes must be opened to public traffic."

In the Special Provisions, Section 10.1-01, "ORDER OF WORK," the eight paragraph is deleted.

06-Ker-99-R28.4/R44.3
06-OL6404
Project ID 0600020132
ACNH-P099(551)E

In the Special Provisions, Section 10-1.105, "COOPERATION," is added as attached.

In the Special Provisions, Section 10-1.12, "TIME-RELATED OVERHEAD," the following paragraph is added after the twenty first paragraph:

"Full compensation for additional overhead costs involved in incentive and disincentive provisions to satisfy internal milestone or multiple calendar requirements shall be considered as included in the contract items of work involved and no additional compensation will be allowed therefor."

In the Special Provisions, Section 10-1.15, "MAINTAINING TRAFFIC," Lane Closure Charts No. 1 and No. 2 are revised as attached and Lane Closure Chart No. 3 is deleted.

In the Special Provisions, Section 10-1.185, "END OF QUEUE WARNING AND SERVICE PATROL," is added as attached.

In the Special Provisions, Section 10-1.20, "PORTABLE CHANGEABLE MESSAGE SIGNS," is revised as attached.

In the Special Provisions, Section 10-1.40, "CONTINUOUSLY REINFORCED CONCRETE PAVEMENT," is revised as attached.

In the Special Provisions, Section 10-1.41, "CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (RAPID STRENGTH CONCRETE)," is revised as attached.

Addendum No. 3
Page 3
November 14, 2011

06-Ker-99-R28.4/R44.3
06-OL6404
Project ID 0600020132
ACNH-P099(551)E

In the Bid book, in the "Bid Item List," Items 35 and 43 are revised, Items 92 and 93 are added and Item 91 is deleted as attached.

To Bid book holders:

Replace pages 4, 5 and 7 of the "Bid Item List" in the Bid book with the attached revised pages 4, 5 and 7 of the Bid Item List. The revised Bid Item List is to be used in the bid.

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the Notice to Bidders section of the Notice to Bidders and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the Bid book.

Submit bids in the Bid book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

This addendum, attachments and the modified wage rates are available for the Contractors' download on the Web site:

http://www.dot.ca.gov/hq/esc/oe/project_ads_addenda/06/06-OL6404

If you are not a Bid book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,



REBECCA D. HARNAGEL
Chief, Office of Plans, Specifications & Estimates
Office Engineer
Division of Engineering Services

Attachments

SECTION 4. BEGINNING OF WORK, TIME OF COMPLETION, AND LIQUIDATED DAMAGES

The 1st working day is the 55th day after contract approval.

Do not start work at the job site until the Engineer approves your submittal for:

1. Baseline Progress Schedule (Critical Path Method)
2. Storm Water Pollution Prevention Plan (SWPPP)
3. Notification of Dispute Resolution Advisor (DRA) or Dispute Review Board (DRB) nominee and disclosure statement as specified in Section 5-1.15, "Dispute Resolution," of the Standard Specifications

You may enter the job site only to measure controlling field dimensions and locating utilities. Do not start other work activities until all the submittals from the above list are approved and the following information is submitted:

1. Notice of Materials To Be Used.
2. Contingency plan for reopening closures to public traffic.
3. Written statement from the vendor that the order for the sign panels has been received and accepted by the vendor. The statement must show the dates that the materials will be shipped.
4. Written statement from the vendor that the order for electrical material has been received and accepted by the vendor. The statement must show the dates that the materials will be shipped.
5. Written statement from the vendor that the order for structural steel has been received and accepted by the vendor. The statement must show the dates that the materials will be shipped.

You may start work at the job site before the 55th day after contract approval if:

1. You obtain required approval for each submittal before the 55th day
2. The Engineer authorizes it in writing

The Department grants a time extension if a delay is beyond your control and prevents you from starting work at the job site on the 1st working day.

Complete the work within the number of working days bid.

Additional damages to those specified in Section 8-1.07, "Liquidated damages," of the Standard Specifications are \$18,000 per day starting on the 1st day after exceeding the number of working days bid until work requiring lane or shoulder closures on State Highway Route 99 is complete.

INCENTIVES AND DISINCENTIVES

Incentive payments and disincentive deductions apply to the completion of the work specified in the Incentive / Disincentive table.

Comply with "Maintaining Traffic" and "Closure Requirements and Conditions" of these special provisions.

Complete the work specified within the time specified in the Incentive / Disincentive table starting on the day specified. If you complete the work within the specified time, you will receive the incentive shown for each day less than the time specified. If you do not complete the work within the specified time, the Department will deduct the disincentive shown for each day needed to complete the work.

| Work | Time of Completion of Work (Calendar Days) | Incentive Payment per Day | Disincentive Deduction per Day |
|---|--|---------------------------|--------------------------------|
| Complete all work in Stage 5, Phase 1 including remove temporary railing and place new permanent pavement delineations. Open all lanes to public traffic for southbound from PM 28.4 to PM 29.4 and northbound from PM 28.40 to PM 31.10. | 50 | \$50,000 | \$50,000 |

Total incentive payment will not exceed \$500,000.

Total disincentive deduction will not exceed \$500,000.

The time limit specified for the completion of the work is considered insufficient to permit completion of the work by working a normal number of hours per day or week on a single shift basis. Should you fail to maintain the progress of the work in conformance with "Progress Schedule (Critical Path Method)" of these special provisions, additional shifts will be required to the extent necessary to ensure that the progress conforms to the above mentioned schedule and that the work will be completed within the time limit specified.

Actions required by the Engineer to perform normal inspection and testing duties will not be considered as contributing to any delay in awarding incentives or to any delay that will require charging disincentives.

Full compensation for any additional costs incurred by compliance with the provisions in this section is included in the prices paid for the various contract items of work and no additional compensation will be allowed.

10-1.105 COOPERATION

It is anticipated that work by another contractor may be in progress adjacent to or within the limits of this project during progress of the work on this contract. The following table lists contracts anticipated to be in progress during this contract.

| Contract No. | Co-Rte-PM | Location | Type of Work |
|--------------|-------------------|--|---|
| 06-0N1704 | Ker-99-R43.9/49.3 | Northbound on Route 99 From 0.4 mile south of Route 46/99 Separation to Sherwood Avenue Overcrossing | Replace concrete slabs and grind concrete pavement. |
| 06-0L8904 | Ker-99-26.8/28.4 | From Airport Drive overcrossing to Beardsley Canal Bridge | Widen shoulder and grind rumble strip. |
| 06-0G8404 | Ker-99-27/28.4, | From Route 204/99 Separation to Beardsley Canal | Widen Freeway from 6 to 8 lanes. |
| 06-0N4904 | Ker-99-27.0/27.9 | From Route 204/99 Separation to Olive Drive | Construct SB auxiliary lane and widen Olive Drive on-ramp. |
| 06-0M2704 | Ker-99- Var | Location No.12 PM 28.39, Location No. 13 PM 28.56, Location No.14 PM 36.52, Location No.15 PM 41.16 | Place methacrylate and replace bridge joint seals. |

Comply with Section 7-1.14, "Cooperation," of the Standard Specifications.

| Chart No. 1 Freeway/Expressway Lane Requirements | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|---|---|---|--------------------------------|---|---|---|---|---|----|----|----|----|-----------------|----|----|----|----|----|----|----|----|----|----|
| County: Kern | | | | | | Route/Direction: 99/Northbound | | | | | | | | | | PM: R28.4/R44.3 | | | | | | | | | | |
| Closure Limits: From Beardsley Canal PM R28.4 to Route 46/99 Separation PM R44.3- (Stage 1 through Stage 6) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FROM HOUR TO HOUR | | 24 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Mondays through Thursdays | | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | |
| Fridays | | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Saturdays | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Sundays | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | |
| Legend: | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | | Provide at least one through freeway lane open in direction of travel | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | Provide at least two through freeway lanes open in direction of travel | | | | | | | | | | | | | | | | | | | | | | | | |
| REMARKS: | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a. The full width of traveled way shall be open for use by public traffic when construction operations are not actively in progress | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Chart No. 2 Freeway/Expressway Lane Requirements | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|---|---|---|--------------------------------|---|---|---|---|----|----|----|----|----|-----------------|----|----|----|----|----|----|----|----|----|
| County: Kern | | | | | | Route/Direction: 99/Southbound | | | | | | | | | | PM: R28.4/R44.3 | | | | | | | | | |
| Closure Limits: From Beardsley Canal PM R28.4 to Route 46/99 Separation PM R44.3 (Stage 1 through Stage 6) | | | | | | | | | | | | | | | | | | | | | | | | | |
| FROM HOUR TO HOUR | 24 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Mondays through Thursdays | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | |
| Fridays | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Saturdays | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Sundays | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | |
| Legend: | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Provide at least one through freeway lane open in direction of travel | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Provide at least two through freeway lanes open in direction of travel | | | | | | | | | | | | | | | | | | | | | | | | |
| REMARKS: | | | | | | | | | | | | | | | | | | | | | | | | | |
| a. The full width of traveled way shall be open for use by public traffic when construction operations are not actively in progress | | | | | | | | | | | | | | | | | | | | | | | | | |

10-1.185 END OF QUEUE WARNING AND SERVICE PATROL

Prior to commencing work, you must provide the Engineer an hourly cost breakdown for End of Queue Warning and an hourly cost breakdown for Service Patrol.

Comply with Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications.

END OF QUEUE WARNING

End of queue warning includes warning approaching traffic, using a changeable message sign truck (CMST), when traffic on Route 99 is moving less than 45 mph.

Materials

Each CMST must be in good working order and must have:

1. Cellular phone
2. An axle rating of at least 2,000 pounds.
3. Amber rotating beacon.
4. Front bumper push bar with rubber face.
5. External speaker and address system.
6. 54"x 42" SC15 (CA) (CAUTION) sign attached to tailgate.
7. Two-way radios and programmable scanner capable of scanning Caltrans and CHP radio frequencies

Changeable message sign (CMS) must display alternating messages, "SLOW TRAFFIC AHEAD" and "PREPARE TO STOP," at 3-second intervals with minimum 12-inch tall characters and be legible from at least 1,500 feet away.

Construction

Mount CMS on supporting structure affixed to the truck under the manufacturer's recommendations.

If Stage Construction with temporary railing (Type K) is in place, provide one CMST for each phase and for each direction of travel and assign at least one trained operator for each CMST. Continue providing end of queue warning until traffic is moving at free-flow conditions (traffic backup has dissipated).

The CMST shall be located and periodically moved as necessary, to a position no more than 1,500 feet and no less than 1,000 feet before the end of the queue.

Reposition CMST as necessary to maintain above distances until traffic condition abates and traffic flow is greater than 45 mph. Coordinate activity with other CMSTs. Advise other CMSTs and the Engineer of changing traffic conditions. The CMST operator shall notify the Engineer within 10 minutes of traffic slowing to 35 mph or less.

Safely stop CMST outside of traveled way, as far from traffic as practicable, and where an errant vehicle is least likely to hit.

When traffic conditions persist and work has ceased or you are repositioned outside the project limits, notify the Engineer and continue to maintain traffic.

SERVICE PATROL

Service patrol includes clearing the roadway of hazards that impede traffic flow and providing assistance to California Highway Patrol and emergency responders during incident response.

Materials

Each Service Patrol Truck must be in good working order and must have:

1. Cellular telephone
2. First aid kit
3. Fire extinguisher (aggregate rating of at least 4-B, C units)
4. 5 gallons of potable water
5. 2-foot wide push broom
6. Square point shovel
7. 50 highway flares (15 minute rating)
8. At least ten 28-inch tall orange traffic cones with retroreflective sleeves
9. Flashlight and spare batteries
10. Booster cables
11. Mechanic's tool kit
12. 5-gallon can with lid filled with absorbent material
13. An axle rating of at least 2,000 pounds
14. Amber rotating beacon
15. Winch rated at a minimum of 8,000 pounds
16. Trailer hitch and balls (1-3/4 inch and 2 inch)
17. Two-way radios and programmable scanner capable of scanning Caltrans and CHP radio frequencies
18. Five (5) gallons of unleaded gasoline
19. Five (5) gallons of diesel fuel
20. Funnel-flexible spout
21. Three (3) foot or longer pry-bar
22. Two-ton hydraulic floor jack and hydraulic jack-trolley type
23. Wood blocks
24. 4-way lug wrench (metric and standard)
25. Heavy duty 60 amp battery

Construction

If Stage Construction with temporary railing (Type K) is in place, provide one Service Patrol Truck and assign at least one trained operator. Continue providing service patrol until traffic is moving at free-flow conditions (traffic backup has dissipated).

The Service Patrol Truck shall continuously travel the project limits. Duties consist of:

1. Keeping the traveled way clear of obstructions, including construction debris, tires, and automobile parts.
2. Assisting disabled vehicles and moving them to the nearest pull out area out of the traveled way where reasonable to do so.
3. Immediately replacing displaced, overturned, or damaged traffic control devices, including signs, tubular markers, drums, and cones. Use appropriate measures, including flashing arrow or caution display, rotating beacon, flares and cones, to protect the traveling public until the traffic control devices are back in place and operational.
4. Assisting in on-scene traffic control during incident response.

Notify the Engineer and the Transportation Management Center when an incident occurs. Incidents include a crash or hazardous material spill. Use appropriate measures, including flashing arrow or caution display, rotating beacon, flares and cones, to protect the traveling public until relieved by the Traffic Management Team or maintenance crew regardless whether work has ceased or you are operating outside of the project limits.

The provisions in this section will not relieve the Contractor from his responsibility to provide such additional devices or take such measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety", of the Standard Specifications and "Traffic Control System for Lane Closure" in these special provisions.

PAYMENT

The contract lump sum price paid for end of queue warning and service patrol shall include full compensation for furnishing all labor, materials (including signs), tools, equipment, and incidentals and for doing all the work involved in the end of queue warning and service patrol, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.20 PORTABLE CHANGEABLE MESSAGE SIGNS

GENERAL

Summary

Work includes furnishing, placing, operating, maintaining, and removing portable changeable message signs. Comply with Section 12-3.12 "Portable Changeable Message Signs," of the Standard Specifications.

Definitions

useable shoulder area: Paved or unpaved contiguous surface adjacent to the traveled way with:

1. Sufficient weight bearing capacity to support portable changeable message sign
2. Slope not greater than 6:1 (horizontal:vertical)

Submittals

Upon request, submit a Certificate of Compliance for each portable changeable message sign under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

Quality Control and Assurance

Comply with the manufacturer's operating instructions for portable changeable message sign.

Approaching drivers must be able to read the entire message for all phases at least twice at the posted speed limit before passing portable changeable message sign. You may use more than 1 portable changeable message sign to meet this requirement.

Only display the message shown on the plans or ordered by the Engineer or specified in these special provisions.

MATERIALS

Portable changeable message sign must have 24-hour timer control or remote control capability.

The text of the message displayed on portable changeable message sign must not scroll, or travel horizontally or vertically across the face of the message panel.

CONSTRUCTION

Continuously repeat the entire message in no more than 2 phases of at least 3 seconds per phase.

If useable shoulder area is at least 15 feet wide, the displayed message on portable changeable message sign must be minimum 18-inch character height. If useable shoulder area is less than 15 feet wide, you may use a smaller message panel with minimum 12-inch character height to prevent encroachment in the traveled way.

You or your representative must be available by cell phone for operations that require portable changeable message signs. Give the Engineer your cell phone number. When the Engineer contacts you, immediately comply with the Engineer's request to modify the displayed message.

Start displaying the message on portable changeable message sign 5 minutes before closing the lane as directed by the Engineer.

In addition to the locations as shown on the plans, place two (2) portable changeable message signs for each lane closure and one (1) portable changeable message sign for each ramp closure. The exact locations shall be designated by the Engineer.

You must furnish eight additional portable changeable message signs (PCMS) for the sole purpose of informing the public and be used as part of "TMP Public Information". These PCMS shall be placed at the locations as shown on the plan or as directed by the Engineer. These PCMS may be placed up to 10 miles outside the project limits on State and public roads.

Place portable changeable message sign as far from the traveled way as practicable where it is legible to traffic and does not encroach on the traveled way. Place portable changeable sign before or at the crest of vertical roadway curvature where it is visible to approaching traffic. Avoid placing portable changeable message sign within or immediately after horizontal roadway curvature. Where possible, place portable changeable message sign behind guardrail or temporary railing (Type K).

Except where placed behind guardrail or temporary railing (Type K) use traffic control for shoulder closure to delineate portable changeable message sign.

Remove portable changeable message sign when not in use.

MEASUREMENT AND PAYMENT

The contract lump sum price paid for portable changeable message signs includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, placing, operating, modifying messages, maintaining portable changeable message signs, complete in place, including transporting from location to location, removing, and repairing or replacing defective or damaged portable changeable message signs, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.40 CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

GENERAL

Summary

This work includes constructing continuously reinforced concrete pavement. Comply with Section 40, "Concrete Pavement," of the Standard Specifications.

Submittals

If epoxy-coated steel is used in continuously reinforced concrete pavement, submit a copy of the certification for each plant used.

Submit coefficient of thermal expansion test results to the Engineer.

Quality Control and Assurance

Perform coefficient of thermal expansion testing under AASHTO T 336 at a frequency of 1 test for each 5,000 cubic yards of paving but not less than 1 test for projects with less than 5,000 cubic yards of CRCP. This test is not going to be used for acceptance. Provide a split test sample to METS.

Perform profilograph testing on concrete shoulders. Testing and test results for shoulders must comply with the specifications for concrete pavement smoothness, profilograph test procedure, and corrective action for traffic lanes.

Prepaving Conference

Meet with the Engineer at a prepaving conference at a mutually agreed time and place. The conference facility must be within 3 miles of the job site. Discuss methods of performing the production and paving work.

Prepaving conference attendees must sign an attendance sheet provided by the Engineer. The prepaving conference must be attended by your:

1. Project superintendent
2. Quality control manager
3. Paving construction foreman
4. Subcontractor's workers including:
 - 4.1. Foremen
 - 4.2. Concrete plant manager
 - 4.3. Concrete plant operator
 - 4.4. Personnel performing saw cutting and joint sealing

Do not start paving activities including test strips until the listed personnel have attended a prepaving conference.

Test Strips

The first paving activity must be to construct a test strip:

1. 700 to 1,000 feet long
2. Same width as the planned paving
3. With the same equipment used for the planned paving

The Engineer evaluates the test strip for compliance with the specifications for Engineer's acceptance.

The Engineer selects from 3 to 6 core locations per test strip.

Allow the Engineer 3 days to evaluate the test strip for:

1. Smoothness
2. Reinforcement alignment
3. Thickness
4. Final finishing except coefficient of friction is not evaluated

During the 3 day evaluation, the Engineer rejects a test strip if any of the following occurs:

1. Surface varies more than 0.02 feet from a straightedge's lower edge
2. Wheel path's individual high points are greater than 0.025 feet in 25 feet
3. Reinforcement does not comply with specified placement tolerances
4. Pavement thickness deficiency is greater than 0.05 feet
5. Final finishing does not comply with the specifications

Remove the test strip if the Engineer rejects it for noncompliance with the specifications for thickness or reinforcement alignment. Dispose of rejected test strip material under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

If the Engineer rejects the test strip for noncompliance with smoothness or final finishing specifications, you may grind the test strip into compliance if you intend to leave it as part of the paving.

If the Engineer accepts the test strip, you may start production paving while the Engineer continues to evaluate the test strip for compliance with the other specifications. If the Engineer rejects the test strip for noncompliance with the other specifications, stop production paving until you construct a test strip the Engineer accepts.

For rejected test strips, submit a plan for changed materials, methods, or equipment before constructing additional test strips. Construct additional test strips until the Engineer accepts one.

Construct additional test strips for any of the following:

1. You propose different paving equipment including:
 - 1.1. Batch plant
 - 1.2. Paver
 - 1.3. Tining
 - 1.4. Curing equipment
2. You change concrete mix proportions

The Engineer may allow paving to start without a test strip if you use a batch plant mixer, paving equipment, and personnel that completed a Department continuously reinforced concrete pavement project within the preceding 12 months. Submit supporting documents and previous project information to the Engineer.

Engineer's Acceptance

The Engineer accepts concrete pavement based on the Department's testing for the following additional test:

| Concrete Pavement Acceptance | | |
|----------------------------------|--------------------------|--------------|
| Test or Determination | Frequency | Test |
| Coefficient of Thermal Expansion | 1 test per day of paving | AASHTO T 336 |

MATERIALS

Concrete

Concrete for terminal joints, support slabs, and pavement anchors must comply with the specifications for concrete for continuously reinforced concrete pavement.

During concrete mix design, perform coefficient of thermal expansion testing under AASHTO T 336 from trial mixture samples. The Department will approve the mix based on your reported value of the CoTE test. Provide a split test sample to METS. For mix design acceptance, the coefficient of thermal expansion must not exceed 6.0×10^{-6} inch/inch/degree Fahrenheit.

If changing an aggregate supply source or the mix properties or proportions, perform coefficient of thermal expansion testing for the new concrete mix. The CoTE for new mix must comply with the requirement of the preceding paragraph. The Engineer does not adjust contract time for performing sampling, testing, and qualifying new mix for coefficient of thermal expansion.

Dowel Expansion Caps

Dowel expansion caps must comply with the following:

1. Made from plastic
2. Sized to provide a slip fit onto the end of dowel bars
3. With a uniform diameter of 1.5 inches
4. Include a device that maintains the end of the cap a minimum 1.5 inches from the end of the dowel bar during concrete placement
5. With a uniform thickness of 63 mils
6. Manufactured in 1 piece
7. Closed on 1 end

Transverse Bar Assembly

You may use transverse bar assemblies to support longitudinal reinforcement instead of transverse reinforcement and other support devices. Transverse bar assemblies must comply with the following:

1. Minimum W5 wire size number under ASTM A 82/A 82M for clips
2. Minimum W2 wire size number under ASTM A 82/A 82M for chairs
3. Welded under Section 7.4 of ASTM A 185/A 185M

You may request to use plastic chairs to support the placing of reinforcement instead of or in addition to metal chairs. Plastic chairs will only be considered for support under the transverse bars. Your request to use plastic chairs must include a sample of the plastic chair, the manufacturer's written recommendations for the applicable use and load capacity, chair spacing, and your calculation for the load on a chair for the area of rebar sitting on it. Use the proposed plastic chairs for construction of the test strip. Vertical and lateral stability of the bar reinforcement and plastic chairs must be demonstrated during construction of the trial strip. Obtain authorization from the Engineer before using the proposed plastic chairs for work after the test strip is accepted."

Tack Coat

Tack coat must comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications.

Liquid Joint Sealant

Liquid joint sealant for longitudinal contraction joint must be silicone.

Isolation Joints

Liquid joint sealant for isolation joints must be silicone.

Expansion Joints

Joint seals for transverse expansion joints and must comply with Section 51-1.12F, "Sealed Joints," of the Standard Specifications.

Expanded polystyrene for transverse expansion joints must comply with Section 51-1.12D, "Sheet Packing, Preformed Pads and Board Fillers," of the Standard Specifications.

Terminal Joints

For terminal joints (Type D) joint seals must be Type C.

CONSTRUCTION

Anchorage

Class 1 permeable material, filter fabric, and slotted plastic pipe crossdrain for pavement anchors must comply with Section 68-3, "Edge Drains," of the Standard Specifications.

Transition Joints With Asphalt Concrete

If a joint between concrete pavement and asphalt concrete is specified, apply tack coat between the concrete pavement and asphalt concrete.

Longitudinal Contraction Joints

Longitudinal contraction joints must be Type B.

Temporary Isolation Joints

Place temporary isolation joints of 1/4-inch commercial quality polyethylene flexible foam joint filler between existing lane No.2 and new lane No.3

Bar Reinforcement in Curves

For transverse bar reinforcement in a curve with a radius under 2,500 feet, place the reinforcement in a single continuous straight line across the lanes and aligned with the radius point. Place tie bars on the same alignment as the transverse bar reinforcement. If the curve does not allow the specified spacing between transverse bar reinforcement and tie bars, space them a distance that is between one half the specified spacing and the specified spacing.

Repair, Removal, and Replacement

If the Engineer orders removal of continuously reinforced concrete pavement, remove it to full depth. Cut transverse saw cuts normal to the lane line. Fill saw cuts extending beyond the removal limits with grout.

Replace concrete pavement with unconsolidated concrete.

If you damage existing bar reinforcement during removal, lengthen the removal area to provide the specified splicing length. Below the reinforcement at a partial depth saw cut, leave the face of the concrete pavement inclined no more than 1:12 (horizontal:vertical) into the removal area.

You may make additional saw cuts within the removal area to facilitate concrete removal or to alleviate binding of the saw cut at the removal area's edge.

Prevent base damage and prevent spalling of the concrete remaining in place. Remove and replace base material disturbed during removal. Place a minimum 4-mil thick polyethylene sheet between the base and new continually reinforced concrete pavement. If concrete is used as base, place replacement continually reinforced concrete pavement after the concrete base has gained sufficient strength to prevent displacement.

For transverse joints, connect longitudinal bar reinforcement with lap splices in compliance with Section 52-1.08A, "Lap Splicing Requirements," of the Standard Specifications.

For longitudinal joints, drill and bond tie bars in compliance with Section 40-3.05, "Tie Bar Placement," of the Standard Specifications.

Within 18 hours after inserting tie bars into the chemical adhesive-filled holes, demonstrate the bond strength is 3/4 of the tie bar yield strength when tested under ASTM E 488. If the bond strength does not comply, increase the embedment depth and retest. Do not place replacement continuously reinforced concrete pavement until the bond strength complies with the specifications.

Sawcut and seal expansion joints in the repair area. Use preformed sponge rubber expansion joint filler for expansion joints and longitudinal joints. Preformed sponge rubber expansion joint filler must comply with ASTM D 1752.

MEASUREMENT AND PAYMENT

Continuously reinforced concrete pavement (Terminal Joint), continuously reinforced concrete pavement (Expansion Joint), and continuously reinforced concrete pavement (Pavement Anchor) of the types designated in the Verified Bid Item List are measured by the linear foot from field measurements.

If the Engineer accepts a test strip and it remains as part of the paving surface, the test strip is measured and paid for as continuously reinforced concrete pavement, seal pavement joint, and seal isolation joint as the case may be.

Full compensation for coring test strips and for back-filling core holes when the test strip remains as part of the continuously reinforced concrete pavement is included in the contract price paid per cubic yard for continuously reinforced concrete pavement and no additional compensation will be allowed therefor.

The contract price paid per linear foot for continuously reinforced concrete pavement (Terminal Joint) of the type designated in the Verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the terminal joints including saw cutting, dowel bars, drill and bond dowel bars, support slab, support slab reinforcement, tack coat, and temporary hot mix asphalt, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per linear foot for continuously reinforced concrete pavement (Expansion Joint) of the type designated in the Verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in continuously reinforced concrete pavement (Expansion Joint), complete in place, including polystyrene, support slab, support slab reinforcement, dowel bars, drill and bond dowel bars, and bond breaker, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per linear foot for continuously reinforced concrete pavement (Pavement Anchor) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in continuously reinforced concrete pavement (Pavement Anchor), complete in place, including cross drains, anchor reinforcement, filter fabric, and permeable material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for providing a facility for and attending the prepaving conference is included in the contract price paid per cubic yard for continuously reinforced concrete pavement and no additional compensation will be allowed therefor.

Full compensation for epoxy coating of steel reinforcement is included in the contract price paid per cubic yard for continuously reinforced concrete pavement and no additional compensation will be allowed therefor.

Full compensation for temporary isolation joint is included in the contract price paid per cubic yard for continuously reinforced concrete pavement and no additional compensation will be allowed therefor.

10-1.41 CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (RAPID STRENGTH CONCRETE)

GENERAL

Summary

This work includes constructing continuously reinforced concrete pavement RSC.
Comply with Section 40, "Concrete Pavement," of the Standard Specifications.

Definitions

early age: Time less than 10 times the concrete's final set time.

final set time: Time a specific penetration resistance of 4,000 psi is achieved, determined under ASTM C 403.

opening age: Time the concrete achieves the specified strength for opening to traffic.

Submittals

If epoxy-coated steel is used in continuously reinforced concrete pavement RSC, submit a copy of the certification for each plant used.

Submit coefficient of thermal expansion test results to the Engineer and at the website <http://169.237.179.13/cte/>.

Quality Control and Assurance

General

Perform coefficient of thermal expansion testing under AASHTO T 336 at a frequency of 1 test for each 5,000 cubic yards of paving but not less than 1 test for projects with less than 5,000 cubic yards of CRCP. This test is not going to be used for acceptance. Provide a split test sample to METS.-Perform profilograph testing on concrete shoulders. Testing and test results for shoulders must comply with the specifications for concrete pavement smoothness, profilograph test procedure, and corrective action for traffic lanes.

Prepaving Conference

Meet with the Engineer at a prepaving conference at a mutually agreed time and place. The conference facility must be within 3 miles of the job site. Discuss methods of performing the production and paving work.

Prepaving conference attendees must sign an attendance sheet provided by the Engineer. The prepaving conference must be attended by your:

1. Project superintendent
2. Quality control manager
3. Paving construction foreman
4. Subcontractor's workers including:
 - 4.1. Foremen
 - 4.2. Concrete plant manager
 - 4.3. Concrete plant operator
 - 4.4. Personnel performing saw cutting and joint sealing

Do not start paving activities including trial slab until the listed personnel have attended a prepaving conference.

Quality Control Program

General

Establish a quality control program. The quality control program assures the Engineer that methods and procedures are in place to produce and place RSC in compliance with the specifications.

If the quality control program is not implemented and followed, the Engineer orders RSC work stopped.

Quality Control Managers

For the project, designate a lead QCM and assistant QCMs.

The lead QCM administers the quality control plan (QCP). The lead QCM must hold current American Concrete Institute (ACI) certification as "Concrete Field Testing Technician-Grade I" and "Concrete Laboratory Testing Technician-Grade II." Assistant QCMs must hold current ACI certification as "Concrete Field Testing Technician-Grade I" and either "Concrete Laboratory Testing Technician-Grade I" or "Concrete Laboratory Testing Technician-Grade II." Assistant QCMs must hold current ACI certification as "Concrete Field Testing Technician-Grade I" and either "Concrete Laboratory Testing Technician-Grade I" or "Concrete Laboratory Testing Technician-Grade II."

The QCM responsible for the production period involved must review and sign the sampling, inspection, and test reports before submittal to the Engineer. At least 1 QCM must be present for:

1. Each stage of mix design
2. Trial slab construction
3. Production and construction of RSC
4. Meetings with the Engineer relating to production, placement, or testing.

A QCM must not be a member of this project's production or paving crews, an inspector, or a tester. A QCM must have no duties during the production and placement of RSC except those specified.

Quality Control Plan

The QCP describes the procedures you will use to control the production process including:

1. Determining if changes to the production process are needed
2. Procedures for proposing changes
3. Procedures for implementing changes

Do not start RSC work until the QCP has been accepted by the Engineer. The Engineer accepts the QCP based the inclusion and adequacy of:

1. The names and qualifications of the lead Quality Control Manager (QCM) and assistant QCMs.
2. An outline procedure for the placement and testing of trial slab
3. An outline procedure for the production, transportation, and placement of RSC
4. An outline procedure for sampling and testing to be performed during and after RSC construction
5. A contingency plan for correcting problems in production, transportation, or placement. Include the quantity and location of standby material in your contingency plan.
6. Provisions for determining if RSC placement must be suspended and temporary roadway pavement structure constructed
7. Forms to report inspection, sampling, and testing
8. The location of your quality control testing laboratory and testing equipment during and after paving operations
9. A list of the testing equipment to be used including date of last calibration
10. The names and certifications of quality control personnel including those performing sampling and testing

At the time of QCP submission, the Department qualifies the quality control samplers and testers through the Independent Assurance Program (IAP) for the sampling and testing they perform.

Quality Control Inspection, Sampling, and Testing

Perform quality control sampling, testing, and inspection throughout RSC production and placement. Before any sampling and testing, give the Engineer at least 2 business days notice. Give the Engineer unrestricted access to your quality control inspectors, samplers, testers, and laboratories. Submit testing results within 15 minutes of testing completion. Record inspection, sampling, and testing on the forms accepted with the QCP and submit them within 48 hours of completion of each paving shift and within 24 hours of 7-day modulus of rupture tests.

Provide a testing laboratory to perform quality control tests. Maintain sampling and testing equipment in proper working condition. Perform sampling under California Test 125.

Testing laboratories and testing equipment must comply with the Department's Independent Assurance Program.

Trial Slabs

Before starting work on RSC, complete one trial slab for each rapid strength concrete mix design. Trial slabs demonstrate that you are capable of producing replacement concrete pavement in compliance with the specifications within the specified time periods including delivery, placement, finishing, and curing times, and under similar atmospheric and temperature conditions expected during replacement operations.

The trial slab must be at least 10' x 20'. The trial slab thickness must be at least 10 inches. Place trial slabs near the job site at a mutually-agreed location that is neither on the roadway nor within the project limits.

During trial slab construction, sample and split the aggregate for gradings, cleanness value, and sand equivalent testing.

Trial slab must comply with the QCP for RSC production and placement. The QCP must detail your intended:

1. Locations and times
2. Production procedures
3. Placement and finishing methods
4. Sampling methods, sample curing, and sample transportation
5. Testing and test result reporting

Production Process Control and Quality Control Testing

Contingency plan equipment and personnel must be present at the job site.

Provide continuous process control and quality control sampling and testing throughout RSC production and placement.

During production of RSC, sample and test aggregates at least once for every 650 cubic yards of RSC produced, but not less than once per placement shift. Test aggregates for compliance with gradations, cleanness value, and sand equivalent specifications.

At least once for every 650 cubic yards of RSC produced, but not less than twice per placement shift, sample and test for:

1. Yield
2. Penetration
3. Air content
4. Unit weight

During placement of RSC, fabricate beams and test for modulus of rupture within the first 30 cubic yards, at least once every 130 cubic yards, and within the final truckload.

If the Engineer requests, submit split samples and fabricate test beams for the Engineer's testing.

For determining early age modulus of rupture, cure beams under the same conditions as the pavement until 1 hour before testing. Cure beams fabricated for the 7-day test under California Test 524. The Engineer uses modulus of rupture test results for accepting or rejecting the replacement pavement and pay factor adjustment for low modulus of rupture.

Dispose of materials resulting from the construction of the test beams, temporary roadway pavement structure, and rejected replacement pavement under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Weighmaster Certificates

Weighmaster certificates for RSC, regardless of the proportioning method used, must include the information necessary to trace the manufacturer and the manufacturer's lot number for the cement being used. If proportioned into fabric containers, the weighmaster certificates for the cement must contain date of proportioning, location of proportioning, and actual net draft cement weight. If proportioned at the pour site from a storage silo, the weighmaster certificates must contain date of proportioning, location of proportioning, and the net draft cement weight used in the load.

Engineer's Acceptance for Modulus of Rupture

RSC pavement must develop a minimum modulus of rupture of 400 psi before opening to traffic. RSC pavement must develop a minimum modulus of rupture of 600 psi 7 days after placement. The Engineer may accept RSC pavement that does not attain the specified moduli of rupture as specified in "Pay Factor Adjustment for Low Modulus of Rupture." The Engineer determines the modulus of rupture by testing 3 beam specimens under California Test 524 and averaging the results. You may fabricate beam specimens using an internal vibrator under ASTM C 31. No single test represents more than that day's production or 130 cubic yards, whichever is less.

Beam specimens for early age must be cured so the temperature in the specimens is within 5 °F of the temperature in the pavement. You must determine the modulus of rupture at other ages using beams cured and tested under California Test 524 except place them in sand from 5 to 10 times the final set time or 24 hours, whichever is earlier. You must perform the testing to determine modulus of rupture values of the RSC pavement in the presence of the Engineer.

Pay Factor Adjustment for Low Modulus of Rupture

The Engineer adjusts payment for RSC for modulus of rupture as follows:

1. Payment for RSC with a modulus of rupture of 400 psi or greater before opening to traffic and 7-day modulus of rupture of 600 psi or greater is not adjusted.
2. Payment for RSC with a 7-day modulus of rupture less than 500 psi is not adjusted and no payment is made. Remove this RSC and replace it at your expense with RSC that complies with the specifications.
3. Payment for RSC with a modulus of rupture less than 350 psi before opening to traffic is not adjusted and no payment is made. Remove this RSC and replace it at your expense with RSC that complies with the specifications.
4. Payment for RSC with a modulus of rupture of 350 psi or greater before opening to traffic and a 7-day modulus of rupture greater than or equal to 500 psi is reduced by the percentage in the pay table for the quantity represented by the tests.

Percentage Pay Table

| Modulus of Rupture (psi) at opening to traffic | 7-Day Modulus of Rupture (psi) | | |
|--|--------------------------------|--|--|
| | Greater than or equal to 600 | Less than 600 and greater than or equal to 550 | Less than 550 and greater than or equal to 500 |
| Greater than or equal to 400 | 100% | 95% | 90% |
| Less than 400 and greater than or equal to 350 | 95% | 95% | 90% |
| Less than 350 | 0% | 0% | 0% |

MATERIALS

Concrete

Concrete for terminal joints, support slabs, and pavement anchors must comply with the specifications for concrete for continuously reinforced concrete pavement RSC.

Bond Breaker

Bond breaker must be one of the following:

1. White curing paper under ASTM C 171
2. White opaque polyethylene film under ASTM C 171, except that the minimum thickness must be 6 mils
3. Paving asphalt, Grade PG 64-10, under Section 92, "Asphalts," of the Standard Specifications
4. Curing compound (5) under Section 90-7.01b, "Curing Compound Method," of the Standard Specifications

Rapid Strength Concrete

RSC must be one of the following:

1. Concrete complying with section 90 "Portland Cement Concrete", except you may use Type III portland cement.
2. Concrete complying with section 90 "Portland Cement Concrete," except:

- 2.1. You may use any cement that complies with the definition of hydraulic cement or blended hydraulic cement in ASTM C 219 and the requirements shown in the following table:

| Hydraulic Cement^c | | |
|-------------------------------------|--|--------------------------|
| Test Description | Test Method | Requirement ^b |
| Contraction in air | California Test 527, W/C Ratio = 0.39 ±0.010 | 0.053 %, max. |
| Mortar expansion in water | ASTM C 1038 | 0.04 %, max. |
| Soluble chloride ^a | California Test 422 | 0.05 %, max. |
| Soluble sulfates ^a | California Test 417 | 0.30 %, max. |
| Thermal stability | California Test 553 | 90 %, min. |
| Compressive strength @ 3 days | ASTM C 109 | 2,500 psi |

Note:

^a Perform test on a cube specimen fabricated under ASTM C 109. Cure the specimen at least 14 days and then pulverized to 100 percent passing the No. 50 sieve.

^b If you use chemical admixtures, include them when testing.

^c The requirements of this table does not apply to portland cement.

- 2.2. You may use citric acid or borax if you submit a written request from the cement manufacturer and a test sample.

Supplementary cementitious material is not required in RSC.

Choose the combined aggregate grading for RSC from either the 1-1/2 inch maximum or the 1-inch maximum combined grading under Section 90-3.04, "Combined Aggregate Gradings," of the Standard Specifications.

You may use Type C accelerating and Type E accelerating and water reducing chemical admixtures as specified in Section 90-4, "Admixtures," of the Standard Specifications. The requirement for air entrainment of concrete in freeze-thaw areas only applies when portland cement is used.

Mix Design

At least 10 days before use, submit a mix design for RSC that includes:

1. Opening age
2. Proposed aggregate gradation
3. Proportions of hydraulic cement and aggregate
4. Types and amounts of chemical admixtures
5. Maximum time allowed between batching and placing
6. Range of ambient temperatures over which the mix design is effective
7. Final set time
8. Any special instructions or conditions such as water temperature requirements

Submit more than 1 mix design to plan for ambient temperature variations anticipated during RSC placement. Each mix design must have a maximum ambient temperature range of 18 °F.

Submit modulus of rupture development data for each mix design. You may use modulus of rupture development data from laboratory-prepared samples. The testing ages for modulus of rupture development data must include 1 hour before opening age, opening age, one hour after opening age, 24 hours, 7 days, and 28 days.

Calibration Testing Certificates of Compliance

Submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications with each delivery of aggregate, cement, and admixtures to be used for calibration tests. Submit certified copies of the weight of each delivery. The Certificate of Compliance must state the source of materials used for the calibration tests is from the same source to be used in the work. The Certificate of Compliance must be signed by your authorized representative.

Cement and Admixtures

At least 45 days before intended use, submit a sample of cement from each proposed lot and samples of proposed admixtures in the quantities ordered by the Engineer.

During RSC pavement operations, submit uniformity reports for hydraulic cement at least once every 30 days to the Transportation Laboratory, Attention: Cement Laboratory. Uniformity reports must comply with ASTM C 917, except testing age and water content may be modified to suit the particular material.

Add enough air-entraining admixture in compliance with Section 90-4, "Admixtures," of the Standard Specifications to attain an air content of 4 ± 1.5 percent in the freshly mixed concrete.

During concrete mix design, perform coefficient of thermal expansion testing under AASHTO T 336 from trial mixture samples. The Department will approve the mix based on your reported value of the CoTE test. Provide a split test sample to METS. For mix design acceptance, the coefficient of thermal expansion must not exceed 6.0×10^{-6} inch/inch/degree Fahrenheit.

If changing an aggregate supply source or the mix properties or proportions, perform coefficient of thermal expansion testing for the new concrete mix. The CoTE for new mix must comply with the requirement of the preceding paragraph. The Engineer does not adjust contract time for performing sampling, testing, and qualifying new mix for coefficient of thermal expansion.

Dowel Expansion Caps

Dowel expansion caps must comply with the following:

1. Made from plastic
2. Sized to provide a slip fit onto the end of dowel bars
3. With a uniform diameter of 1.5 inches
4. Include a device that maintains the end of the cap a minimum 1.5 inches from the end of the dowel bar during concrete placement
5. With a uniform thickness of 63 mils
6. Manufactured in 1 piece
7. Closed on 1 end

Transverse Bar Assembly

You may use transverse bar assemblies to support longitudinal reinforcement instead of transverse reinforcement and other support devices. Transverse bar assemblies must comply with the following:

1. Minimum W5 wire size number under ASTM A 82/A 82M for clips
2. Minimum W2 wire size number under ASTM A 82/A 82M for chairs
3. Welded under Section 7.4 of ASTM A 185/A 185M

You may request to use plastic chairs to support the placing of reinforcement instead of or in addition to metal chairs. Plastic chairs will only be considered for support under the transverse bars. Your request to use plastic chairs must include a sample of the plastic chair, the manufacturer's written recommendations for the applicable use and load capacity, chair spacing, and your calculation for the load on a chair for the area of rebar sitting on it. Use the proposed plastic chairs for construction of the test strip. Vertical and lateral stability of the bar reinforcement and plastic chairs must be demonstrated during construction of the trial strip. Obtain authorization from the Engineer before using the proposed plastic chairs for work after the test strip is accepted."

Tack Coat

Tack coat must comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications.

Liquid Joint Sealant

Liquid joint sealant for longitudinal contraction joint must be silicone.

Isolation Joints

Liquid joint sealant for isolation joints must be silicone.

Expansion Joints

Joint seals for transverse expansion joints must comply with Section 51-1.12F, "Sealed Joints," of the Standard Specifications.

Expanded polystyrene for transverse expansion joints must comply with Section 51-1.12D, "Sheet Packing, Preformed Pads and Board Fillers," of the Standard Specifications.

Terminal Joints

For terminal joints (Type D), joint seals must be Type C.

CONSTRUCTION

Rapid Strength Concrete

General

Concrete pavement penetration specified in Section 90-6.06, "Amount of Water and Penetration," of the Standard Specifications does not apply to RSC.

RSC must develop the specified opening age and 7-day modulus of rupture strengths.

Proportioning

Weighing, measuring, and metering devices used for proportioning materials must comply with Section 9-1.01, "Measurement of Quantities," of the Standard Specifications.

For batches with a volume of 1 cubic yard or more, proportioning must comply with one of the following methods:

1. Batch the ingredients at a central batch plant and charge them into a mixer truck for transportation to the pour site. Proportion ingredients under Section 90-5, "Proportioning," of the Standard Specifications.
2. Batch the ingredients except the cement at a central batch plant and charge them into a mixer truck for transportation to a cement silo and weigh system, which must proportion cement for charging into the mixer truck.
3. Batch ingredients except the cement at a central batch plant and charge them into a mixer truck for transportation to a location where pre-weighed containerized cement is added to the mixer truck. The cement pre-weighing operation must utilize a platform scale. The platform scale must have a maximum capacity of 2.75 tons with a maximum graduation size of 1 pound. Pre-weigh cement into a fabric container. The minimum amount of cement to be proportioned into any single container must be 1/2 of the total amount required for the load of RSC being produced.
4. Cement, water, and aggregate are proportioned volumetrically.

For central batch plants, indicators for weighing and measuring systems such as over and under dials must be grouped so that each indicator's smallest increment can be accurately read from the control point of the proportioning operation. In addition, indicators for weighing and measuring cement batched from a remote weighing system must be placed so that each indicator can be accurately read from the control point of the proportioning operation.

Weighing equipment must be insulated from other equipment's vibration or movement. When the plant is operating, each draft's material weight must not vary from the designated weight by more than the specified tolerances. Each scale graduation must be 0.001 of the usable scale capacity.

Aggregate must be weighed cumulatively. Equipment for weighing aggregate must have a zero tolerance of ± 0.5 percent of the aggregate's designated total batch weight. Equipment for the separate weighing of the cement must have a zero tolerance of ± 0.5 percent of the cement's designated individual batch draft. Equipment for measuring water must have a zero tolerance of ± 0.5 percent of the water's designated weight or volume.

The weight indicated for any individual batch of material must not vary from the preselected scale setting by more than:

Batch Weight Tolerances

| Material | Tolerance |
|-----------|---|
| Aggregate | ±1.0 percent of designated batch weight |
| Cement | ±0.5 percent of designated batch weight |
| Water | ±1.5 percent of designated batch weight or volume |

Proportioning consists of dividing the aggregate into the specified sizes and storing them in separate bins, and then combining the aggregate with cement and water. Proportion dry ingredients by weight. Proportion liquid ingredients by weight or volume.

Handle and store aggregates under Section 90-5.01, "Storage of Aggregates," of the Standard Specifications. Proportion liquid admixtures under Section 90-4.10, "Proportioning and Dispensing Liquid Admixtures," of the Standard Specifications.

Control aggregate discharged from several bins with gates or mechanical conveyors. The means of discharge from the bins and from the weigh hopper must be interlocked so that no more than 1 bin can discharge at a time, and the weigh hopper cannot be discharged until the required quantity from each of the bins has been deposited in the weigh hopper.

At the time of batching, dry and drain aggregates to a stable moisture content. Do not proportion aggregates with visible separation of water from the aggregate during proportioning. At the time of batching, the free moisture content of fine aggregate must not exceed 8 percent of its saturated, surface-dry weight.

If the proportioning plant has separate supplies of the same size group of aggregate with different moisture content, specific gravity, or surface characteristics affecting workability, exhaust 1 supply before using another supply.

Keep cement separated from the aggregate until discharged into the mixer. When discharged into the mixer, cement must be free of lumps and clods. Before reuse, clean fabric containers used for transportation or proportioning of cement.

Weigh systems for proportioning aggregate and cement must be individual and distinct from other weigh systems. Each weigh system must have a hopper, a lever system, and an indicator.

When ordered by the Engineer, determine the gross weight and tare weight of truck mixers on scales designated by the Engineer.

Install and maintain in operating condition an electrically actuated moisture meter. The meter must indicate on a readily visible scale the changes in the fine aggregate moisture content as it is batched. The meter must have a sensitivity of 0.5 percent by weight of the fine aggregate.

Obtain the Engineer's acceptance before mixing water into the concrete during hauling or after arrival at the delivery point. If the Engineer accepts additional water be incorporated into the concrete, the drum must revolve not less than 30 revolutions at mixing speed after the water is added and before starting discharge. Measure water added to the truck mixer at the job site through a meter in compliance with Section 9-1.01, "Measurement of Quantities," of the Standard Specifications.

Volumetric Proportioning

You may choose to proportion RSC by volume.

Handle and store aggregates under Section 90-5.01, "Storage of Aggregates," of the Standard Specifications. Proportion liquid admixtures under Section 90-4.10, "Proportioning and Dispensing Liquid Admixtures," of the Standard Specifications.

Batch-mixer trucks must proportion cement, water, aggregate, and additives by volume. Aggregate feeders must be connected directly to the drive on the cement vane feeder. The cement feed rate must be tied directly to the feed rate for the aggregate and other ingredients. Only change the ratio of cement to aggregate by changing the gate opening for the aggregate feed. The drive shaft of the aggregate feeder must have a revolution counter reading to the nearest full or partial revolution of the aggregate delivery belt.

Proportion aggregate with a belt feeder operated with an adjustable cutoff gate delineated to the nearest quarter increment. The gate opening height must be readily determinable. Proportion cement by any method that complies with the accuracy tolerance specifications. Proportion water with a meter under Section 9-1.01, "Measurement and Payment," of the Standard Specifications.

Calibrate the cutoff gate for each batch-mixer truck used and for each aggregate source. Calibrate batch-mixer trucks at 3 different aggregate gate settings that are commensurate with production needs. Perform at least 2 calibration runs for each aggregate gate.

Individual aggregate delivery rate check-runs must not deviate more than 1.0 percent from the mathematical average of all runs for the same gate and aggregate type. Each test run must be at least 1,000 pounds.

At the time of batching, dry and drain aggregates to a stable moisture content. Do not proportion aggregates with visible separation of water from the aggregate during proportioning. At the time of batching, the free moisture content of fine aggregate must not exceed 8 percent of its saturated, surface-dry weight.

If the proportioning plant has separate supplies of the same size group of aggregate with different moisture content, specific gravity, or surface characteristics affecting workability, exhaust 1 supply before using another supply.

Cover rotating and reciprocating equipment on batch-mixer trucks with metal guards.

Individual cement delivery rate check-runs must not deviate more than 1.0 percent of the mathematical average of 3 runs of at least 1,000 pounds each.

When the water meter operates from 50 to 100 percent of production capacity, the indicated weight of water delivered must not differ from the actual weight delivered by more than 1.5 percent for each of 2 runs of 300 gallons. Calibrate the water meter under California Test 109. The water meter must be equipped with a resettable totalizer and display the operating rate.

Conduct calibration tests for aggregate, cement, and water proportioning devices with a platform scale located at the calibration site. Platform scales for weighing test-run calibration material must have a maximum capacity of 2.75 tons with maximum graduations of 1 pound. Error test the platform scale within 8 hours of calibrating the batch-mixer truck proportioning devices. Perform error-testing with test weights under California Test 109. Furnish a witness scale that is within 2 graduations of the test weight load. The witness scale must be available for use at the production site throughout the production period. Equipment needed for the calibration of proportioning systems must remain available at the production site throughout the production period.

The batch-mixer truck must be equipped so that accuracy checks can be made. Recalibrate proportioning devices every 30 days after production starts or when you change the source or type of any ingredient.

A spot calibration is calibration of the cement proportioning system only. Perform a 2-run spot calibration each time 55 tons of cement passes through the batch-mixer truck. If the spot calibration shows the cement proportioning system does not comply with the specifications, complete a full calibration of the cement proportioning system before you resume production.

Proportion liquid admixtures with a meter.

Locate cement storage immediately before the cement feeder. Equip the system with a device that automatically shuts down power to the cement feeder and aggregate belt feeder when the cement storage level is less than 20 percent of the total volume.

Submit aggregate moisture determinations, made under California Test 223, at least every 2 hours during proportioning and mixing operations. Record moisture determinations and submit them at the end of each production shift.

Equip each aggregate bin with a device that automatically shuts down the power to the cement feeder and the aggregate belt feeder when the aggregate discharge rate is less than 95 percent of the scheduled discharge rate.

Proportioning device indicators must be in working order before starting proportioning and mixing operations and must be visible when standing near the batch-mixer truck.

Identifying numbers of batch-mixer trucks must be at least 3 inches in height, and be located on the front and rear of the vehicles.

Mix volumetric proportioned RSC in a mechanically operated mixer. You may use auger-type mixers. Operate mixers uniformly at the mixing speed recommended by the manufacturer. Do not use mixers that have an accumulation of hard concrete or mortar.

Do not mix more material than will permit complete mixing. Reduce the volume of material in the mixer if complete mixing is not achieved. Continue mixing until a homogeneous mixture is produced at discharge. Do not add water to the RSC after discharge.

Do not use equipment with components made of aluminum or magnesium alloys that may have contact with plastic concrete during mixing or transporting of RSC.

The Engineer determines uniformity of concrete mixtures by differences in penetration measurements made under California Test 533. Differences in penetration are determined by comparing penetration tests on 2 samples of mixed concrete from the same batch or truck mixer load. The differences must not exceed 5/8 inch. Submit samples of freshly mixed concrete. Sampling facilities must be safe, accessible, clean, and produce a sample that is representative of production. Sampling devices and sampling methods must comply with California Test 125.

Do not use ice to cool RSC directly. If ice is used to cool water used in the mix, it must be melted before entering the mixer.

When proportioning and charging cement into the mixer, prevent variance of the required quantity by conditions such as wind or accumulation on equipment.

Each mixer must have metal plates that provide the following information:

1. Designed usage
2. Manufacturer's guaranteed mixed concrete volumetric capacity
3. Rotation speed

The device controlling the proportioning of cement, aggregate, and water must produce production data. The production data must be captured at 15-minute intervals throughout daily production. Each capture of production data represents production activity at that time and is not a summation of data. The amount of material represented by each production capture is the amount produced in the period from 7.5 minutes before to 7.5 minutes after the capture time. The daily production data must be submitted in electronic or printed media at the end of each production shift. The reported data must be in the order including data titles as follows:

1. Weight of cement per revolution count
2. Weight of each aggregate size per revolution count
3. Gate openings for each used aggregate size
4. Weight of water added to the concrete per revolution count
5. Moisture content of each used aggregate size
6. Individual volume of other admixtures per revolution count
7. Time of day
8. Day of week
9. Production start and stop times
10. Batch-mixer truck identification
11. Name of supplier
12. Specific type of concrete being produced
13. Source of the individual aggregate sizes
14. Source, brand, and type of cement
15. Source, brand and type of individual admixtures
16. Name and signature of operator

You may input production data by hand into a pre-printed form or it may be captured and printed by the proportioning device. Present electronic media containing recorded production data in a tab delimited format on a CD or DVD. Each capture of production data must be followed by a line-feed carriage-return with sufficient fields for the specified data.

Spreading, Compacting, and Shaping

You may use metal or wood side forms. Wood side forms must not be less than 1-1/2 inches thick. Side forms must be of sufficient rigidity, both in the form and in the connection with adjoining forms, that movement will not occur under forces from subgrading and paving equipment or from the pressure of concrete.

Side forms must remain in place until the pavement edge no longer requires the protection of forms. Clean and oil side forms before each use.

After you deposit the RSC on the subgrade, consolidate RSC with high-frequency internal vibrators. Consolidate adjacent to forms and across the full paving width. Place RSC as nearly as possible to its final position. Do not use vibrators for extensive shifting of RSC.

Spread and shape RSC with powered finishing machines supplemented by hand finishing.

After you mix and place RSC, do not add water to the surface to facilitate finishing. Use surface finishing additives as recommended by the manufacturer of the cement after their use is approved by the Engineer.

Joints

Before placing RSC against existing concrete, place 1/4-inch thick commercial quality polyethylene flexible foam expansion joint filler across the original transverse and longitudinal joint faces and extend the excavation's full depth. Place the top of the joint filler flush with the top of the pavement. Secure joint filler to the joint face of the existing pavement to prevent the joint filler from moving during the placement of RSC.

Final Finishing

If the Engineer determines by visual inspection the final texturing may not comply with the specifications for coefficient of friction, the Engineer tests to determine coefficient of friction. Open the pavement to traffic and allow 5 days after concrete placement for the Department to test for coefficient of friction. If pavement does not comply with the specifications for coefficient of friction, grind the pavement under Section 42-2, "Grinding," of the Standard Specifications. Perform grinding before sealing joints.

Curing Method

If portland cement is used for RSC, cure per Section 90-7.02 "Curing Pavement." For other types of hydraulic cement, use the curing method recommended by the manufacturer of the cement for RSC.

Anchorage

Class 1 permeable material, filter fabric, and slotted plastic pipe crossdrain for pavement anchors must comply with Section 68-3, "Edge Drains," of the Standard Specifications.

Transition Joints With Asphalt Concrete

If a joint between concrete pavement and asphalt concrete is specified, apply tack coat between the concrete pavement and asphalt concrete.

Temporary Roadway Pavement Structure

Place hot mix asphalt and aggregate base where existing pavement is replaced for construction of a temporary roadway pavement structure. The quantity must be equal to the quantity of pavement removed during the work shift. If you place temporary roadway pavement structure, it must be maintained and later removed as the first order of work when JPCP (RSC) activities resume. The temporary roadway pavement structure must consist of 3-1/2 inch thick hot mix asphalt over aggregate base. RSC not conforming to the specifications may be used for temporary roadway pavement structure with the Engineer's approval.

Spread and compact aggregate base and hot mix asphalt by methods that produce a well-compacted, uniform base, with a surface of uniform smoothness, texture and density. Surfaces must be free from pockets of coarse or fine material. You may spread aggregate base and hot mix asphalt each in one layer. The finished surface of hot mix asphalt must not vary more than 0.05 foot from the lower edge of a 12-foot long straightedge placed parallel with the centerline and must match the elevation of existing concrete pavement along the joints between the existing pavement and temporary surfacing.

After removing temporary roadway pavement structure, you may stockpile removed aggregate base at the project site and reuse it for temporary roadway pavement structures. When no longer required, dispose of standby material or stockpiled material for temporary roadway pavement structures under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Longitudinal Contraction Joints

Longitudinal contraction joints must be Type B.

Bar Reinforcement in Curves

For transverse bar reinforcement in a curve with a radius under 2,500 feet, place the reinforcement in a single continuous straight line across the lanes and aligned with the radius point. Place tie bars on the same alignment as the transverse bar reinforcement. If the curve does not allow the specified spacing between transverse bar reinforcement and tie bars, space them a distance that is between one half the specified spacing and the specified spacing.

Repair, Removal, and Replacement

If the Engineer orders removal of continuously reinforced concrete pavement RSC, remove it to full depth. Cut transverse saw cuts normal to the lane line. Fill saw cuts extending beyond the removal limits with grout.

Remove and replace unconsolidated concrete.

If you damage existing bar reinforcement during removal, lengthen the removal area to provide the specified splicing length. Below the reinforcement at a partial depth saw cut, leave the face of the concrete pavement inclined no more than 1:12 (horizontal:vertical) into the removal area.

You may make additional saw cuts within the removal area to facilitate concrete removal or to alleviate binding of the saw cut at the removal area's edge.

Prevent base damage and prevent spalling of the concrete remaining in place. Remove and replace base material disturbed during removal. Place a minimum 4-mil thick polyethylene sheet between the base and new continuously reinforced concrete pavement. If concrete is used as base, place replacement continually reinforced concrete pavement after the concrete base has gained sufficient strength to prevent displacement.

For transverse joints, connect longitudinal bar reinforcement with lap splices in compliance with Section 52-1.08A, "Lap Splicing Requirements," of the Standard Specifications.

For longitudinal joints, drill and bond tie bars in compliance with Section 40-3.05, "Tie Bar Placement," of the Standard Specifications.

Within 18 hours after inserting tie bars into the chemical adhesive-filled holes, demonstrate the bond strength is 3/4 of the tie bar yield strength when tested under ASTM E 488. If the bond strength does not comply, increase the embedment depth and retest. Do not place replacement continuously reinforced concrete pavement RSC until the bond strength complies with the specifications.

Sawcut and seal expansion joints in the repair area. Use preformed sponge rubber expansion joint filler for expansion joints and longitudinal joints. Preformed sponge rubber expansion joint filler must comply with ASTM D 1752.

MEASUREMENT AND PAYMENT

Continuously reinforced concrete pavement RSC (Terminal Joint), continuously reinforced concrete pavement RSC (Expansion Joint), and continuously reinforced concrete pavement RSC (Pavement Anchor) of the types designated in the Verified Bid Item List are measured by the linear foot from field measurements.

If the Engineer accepts a trial slab and it remains as part of the paving surface, the trial slab is measured and paid for as continuously reinforced concrete pavement RSC, seal pavement joint, and seal isolation joint as the case may be.

Full compensation for coring trial slab and for back-filling core holes when the trial slab remains as part of the continuously reinforced concrete pavement RSC is included in the contract price paid per cubic yard for continuously reinforced concrete pavement RSC and no additional compensation will be allowed therefor.

The contract price paid per linear foot for continuously reinforced concrete pavement RSC (Terminal Joint) of the type designated in the Verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the terminal joints including saw cutting, dowel bars, drill and bond dowel bars, support slab, support slab reinforcement, tack coat, and temporary hot mix asphalt, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per linear foot for continuously reinforced concrete pavement RSC (Expansion Joint) of the type designated in the Verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in continuously reinforced concrete pavement RSC (Expansion Joint), complete in place, including polystyrene, support slab, support slab reinforcement, dowel bars, drill and bond dowel bars, and bond breaker, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per linear foot for continuously reinforced concrete pavement RSC (Pavement Anchor) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in continuously reinforced concrete pavement RSC (Pavement Anchor), complete in place, including cross drains, anchor reinforcement, filter fabric, and permeable material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The Engineer adjusts payment for continuously reinforced concrete pavement RSC in compliance with "Pay Factor Adjustment for Low Modulus of Rupture."

Repair, or removal and replacement of damaged pavement and base is at your expense and will not be measured or paid for.

The contract item for concrete pavement transition panel as designated in the Verified Bid Item List is measured by the cubic yard. The Engineer calculates the pay quantity volume based on the plan dimensions. The Engineer does not measure concrete pavement placed outside those dimensions unless it was ordered by the Engineer.

The contract price paid per cubic yard for concrete pavement transition panel as designated in the Verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the concrete pavement, complete in place including bar reinforcement, tie bars, and dowel bars as shown on the plans and as specified in these specifications and the special provisions, and as directed by the Engineer.

Full compensation for providing a facility for and attending the prepaving conference is included in the contract price paid per cubic yard for continuously reinforced concrete pavement RSC and no additional compensation will be allowed therefor.

Full compensation for epoxy coating of steel reinforcement is included in the contract price paid per cubic yard for continuously reinforced concrete pavement RSC and no additional compensation will be allowed therefor.

Full compensation for temporary isolation joint is included in the contract price paid per cubic yard for continuously reinforced concrete pavement (Rapid Strength Concrete) and no additional compensation will be allowed therefor.

BID ITEM LIST

06-0L6404

| Item No. | Item Code | Item Description | Unit of Measure | Estimated Quantity | Unit Price | Item Total |
|----------|-----------|--|-----------------|--------------------|------------|------------|
| 21 | 129000 | TEMPORARY RAILING (TYPE K) | LF | 498,000 | | |
| 22 | 129100 | TEMPORARY CRASH CUSHION MODULE | EA | 450 | | |
| 23 | 150711 | REMOVE PAINTED TRAFFIC STRIPE | LF | 848,000 | | |
| 24 | 150714 | REMOVE THERMOPLASTIC TRAFFIC STRIPE | LF | 43,700 | | |
| 25 | 150722 | REMOVE PAVEMENT MARKER | EA | 33,400 | | |
| 26 | 150742 | REMOVE ROADSIDE SIGN | EA | 10 | | |
| 27 | 150846 | REMOVE CONCRETE PAVEMENT | CY | 138,000 | | |
| 28 | 151572 | RECONSTRUCT METAL BEAM GUARD RAILING | LF | 5,910 | | |
| 29 | 152320 | RESET ROADSIDE SIGN | EA | 5 | | |
| 30 | 021717 | ADJUST INLET TO GRADE | EA | 48 | | |
| 31 | 153103 | COLD PLANE ASPHALT CONCRETE PAVEMENT | SQYD | 26,500 | | |
| 32 | 153221 | REMOVE CONCRETE BARRIER | LF | 12 | | |
| 33 | 021718 | REMOVE TRANSITION RAILING | EA | 4 | | |
| 34 | 160101 | CLEARING AND GRUBBING | LS | LUMP SUM | LUMP SUM | |
| 35 | 190101 | ROADWAY EXCAVATION | CY | 429,000 | | |
| 36 | 190105 | ROADWAY EXCAVATION (TYPE Z-2) (AERIALY DEPOSITED LEAD) | CY | 44,800 | | |
| 37 | 190110 | LEAD COMPLIANCE PLAN | LS | LUMP SUM | LUMP SUM | |
| 38 | 198007 | IMPORTED MATERIAL (SHOULDER BACKING) | TON | 10,800 | | |
| 39 | 200052 | PRUNE EXISTING PLANTS | LS | LUMP SUM | LUMP SUM | |
| 40 | 203002 | EROSION CONTROL (COMPOST BLANKET) | CY | 10,700 | | |

BID ITEM LIST

06-0L6404

| Item No. | Item Code | Item Description | Unit of Measure | Estimated Quantity | Unit Price | Item Total |
|----------|-----------|--|-----------------|--------------------|------------|------------|
| 41 | 203026 | MOVE-IN/MOVE-OUT (EROSION CONTROL) | EA | 5 | | |
| 42 | 250201 | CLASS 2 AGGREGATE SUBBASE | CY | 124,000 | | |
| 43 | 260201 | CLASS 2 AGGREGATE BASE | CY | 151,000 | | |
| 44 | 390131 | HOT MIX ASPHALT | TON | 229,000 | | |
| 45 | 394050 | RUMBLE STRIP | STA | 1,600 | | |
| 46 | 394076 | PLACE HOT MIX ASPHALT DIKE (TYPE E) | LF | 17,400 | | |
| 47 | 394090 | PLACE HOT MIX ASPHALT (MISCELLANEOUS AREA) | SQYD | 57 | | |
| 48 | 397005 | TACK COAT | TON | 390 | | |
| 49 | 400050 | CONTINUOUSLY REINFORCED CONCRETE PAVEMENT | CY | 145,000 | | |
| 50 | 400064 | CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (TERMINAL JOINT, TYPE D) | LF | 580 | | |
| 51 | 400075 | CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (PAVEMENT ANCHOR) | LF | 400 | | |
| 52 | 400092 | CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (EXPANSION JOINT, TYPE WF) | LF | 400 | | |
| 53 | 401050 | JOINTED PLAIN CONCRETE PAVEMENT | CY | 38,600 | | |
| 54 | 401083 | SHOULDER RUMBLE STRIP (CONCRETE PAVEMENT, GROUND-IN INDENTATIONS) | STA | 1,240 | | |
| 55 | 021719 | CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (RAPID STRENGTH CONCRETE) | CY | 14,500 | | |
| 56 | 404092 | SEAL PAVEMENT JOINT | LF | 285,000 | | |
| 57 | 404093 | SEAL ISOLATION JOINT | LF | 238,000 | | |
| 58 | 406050 | DOWEL BAR (DRILL AND BOND) | EA | 1,400 | | |
| 59 | 411105 | INDIVIDUAL SLAB REPLACEMENT (RSC) | CY | 1,600 | | |
| 60 | 420201 | GRIND EXISTING CONCRETE PAVEMENT | SQYD | 222,000 | | |

BID ITEM LIST

06-0L6404

| Item No. | Item Code | Item Description | Unit of Measure | Estimated Quantity | Unit Price | Item Total |
|----------|-----------|---|-----------------|--------------------|------------|------------|
| 81 | 840526 | 4" THERMOPLASTIC TRAFFIC STRIPE (BROKEN 17-7) | LF | 3,600 | | |
| 82 | 850101 | PAVEMENT MARKER (NON-REFLECTIVE) | EA | 330 | | |
| 83 | 850111 | PAVEMENT MARKER (RETROREFLECTIVE) | EA | 10,300 | | |
| 84 | 860090 | MAINTAINING EXISTING TRAFFIC MANAGEMENT SYSTEM ELEMENTS DURING CONSTRUCTION | LS | LUMP SUM | LUMP SUM | |
| 85 | 860811 | DETECTOR LOOP | LS | LUMP SUM | LUMP SUM | |
| 86 | 021721 | MODIFY VEHICLE CLASSIFICATION STATION | LS | LUMP SUM | LUMP SUM | |
| 87 | 860930 | TRAFFIC MONITORING STATION | LS | LUMP SUM | LUMP SUM | |
| 88 | 860990 | CLOSED CIRCUIT TELEVISION SYSTEM | LS | LUMP SUM | LUMP SUM | |
| 89 | 021722 | RETROFIT CHANGEABLE MESSAGE SIGN SYSTEM | LS | LUMP SUM | LUMP SUM | |
| 90 | 861504 | MODIFY LIGHTING AND SIGN ILLUMINATION | LS | LUMP SUM | LUMP SUM | |
| 91 | BLANK | | | | | |
| 92 | 120201 | END OF QUEUE WARNING AND SERVICE PATROL | LS | LUMP SUM | LUMP SUM | |
| 93 | 999990 | MOBILIZATION | LS | LUMP SUM | LUMP SUM | |

**TOTAL BID
FOR ITEMS:**

\$ _____

**TOTAL BID
FOR TIME:**

_____ X \$26,800.00 = \$ _____
WORKING DAYS BID **COST PER DAY**
 (Not to exceed 600 Days)

TOTAL BID FOR COMPARISON (COST PLUS TIME):

\$ _____